

1 **In the Claims**

2 Claims 1-17, 38-48 and 60-78 have been canceled without prejudice.

3 Claim 80 is amended.

4 Claims 18-37, 49-59 and 79-81 remain and are listed as follows:

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6 1.-17. (Canceled))

7
8 18. (Original) A multi-media editing method comprising:

9 defining a first data structure that represents a user-defined multi-media
10 editing project;

11 providing a software-implemented matrix switch that is programmable to
12 route multiple switch inputs to multiple switch outputs, at least two of the inputs
13 being capable of competing for a single output during a common time period, the
14 single output being configured to provide a data stream defined by the multi-media
15 editing project;

16 processing the first data structure to provide a second data structure that
17 contains data that can be used to program the matrix switch so that multiple switch
18 inputs are routed to multiple switch outputs; and

19 operating on the second data structure so that no two inputs are routed to
20 said single output during a common time period.

21
22 19. (Original) The multi-media editing method of claim 18, wherein said
23 providing of the software-implemented matrix switch comprises providing a
24 switch having virtual input pins and virtual output pins, the virtual input pins being
25

1 configured to receive individual data streams, the virtual output pins being
2 configured to provide individual data streams.

3
4 20. (Original) The multi-media editing method of claim 18, wherein said
5 processing of the first data structure comprises configuring the matrix switch so
6 that it receives at least one source stream at one of its inputs.

7
8 21. (Original) The multi-media editing method of claim 20, wherein said
9 configuring comprises building a collection of associated objects operably
10 associated with the matrix switch and that are configured to process digital data to
11 provide a source stream at one or more of the inputs.

12
13 22. (Original) The multi-media editing method of claim 21, wherein at
14 least some of the associated objects comprise filters.

15
16 23. (Original) The multi-media editing method of claim 18, wherein said
17 processing of the first data structure comprises providing at least one object
18 configured to receive at least one output stream from the matrix switch, process
19 the output stream to provide an input stream, and provide the input stream to an
20 input of the switch.

21
22 24. (Original) The multi-media editing method of claim 23, wherein said
23 object comprises a transition object that is configured to transition between at least
24 one source stream and at least one other source stream.

1 25. (Original) The multi-media editing method of claim 23, wherein said
2 object comprises an effect object that is configured to operate on a source stream
3 to produce a different source stream.

4
5 26. (Original) The multi-media editing method of claim 23, wherein said
6 object comprises a mix object that is configured to mix multiple audio or video
7 source streams.

8
9 27. (Original) The multi-media editing method of claim 18, wherein said
10 defining of the first data structure comprises defining a hierarchical tree structure.

11
12 28. (Original) The multi-media editing method of claim 27, wherein the
13 hierarchical tree structure comprises nodes that represent tracks, each track being
14 associated with one or more data stream sources.

15
16 29. (Original) The multi-media editing method of claim 28, wherein the
17 data stream sources with which one or more of the tracks are associated comprise
18 video data stream sources.

19
20 30. (Original) The multi-media editing method of claim 28, wherein the
21 data stream sources with which one or more of the tracks are associated comprise
22 audio data stream sources.

1 31. (Original) The multi-media editing method of claim 28, wherein the
2 data stream sources with which one or more of the tracks are associated comprise
3 both video and audio data stream sources.
4

5 32. (Original) The multi-media editing method of claim 18, wherein said
6 processing of the first data structure to provide the second data structure comprises
7 processing the first data structure to provide a grid structure,

8 the grid structure containing multiple rows, individual rows representing
9 inputs of the matrix switch and being associated with individual data stream
10 sources,

11 each row containing at least one value that is associated with an output
12 associated with said single output of the matrix switch.
13

14 33. (Original) The multi-media editing method of claim 32, wherein said
15 operating on the second data structure comprises changing at least one value in at
16 least one of the rows of the grid structure.
17

18 34. (Original) The multi-media editing method of claim 18, wherein said
19 processing of the first data structure comprises configuring the matrix switch so
20 that it receives multiple source streams at multiple respective inputs at multiple
21 times.
22

23 35. (Original) The multi-media editing method of claim 34, wherein said
24 configuring comprises building one or more filter graphs that are individually
25 configured to process digital data to provide multiple respective source streams,

1 and associating one or more filter graphs with individual inputs of the matrix
2 switch.

3
4 36. (Original) The multi-media editing method of claim 35, further
5 comprising building multiple sub-graphs inside one or more of the filter graphs.

6
7 37. (Original) One or more computer-readable media having computer-
8 readable instructions thereon which, when executed by a computer, implement the
9 method of claim 18.

10
11 38.-48. (Canceled).

12
13 49. (Original) One or more computer-readable media having computer-
14 readable instructions thereon which, when executed by a computer, cause the
15 computer to:

16 represent a multi-media editing project as a first data structure;

17 process the first data structure to provide a second data structure containing
18 data that defines an association between inputs, outputs and a time line defined by
19 the editing project;

20 provide a matrix switch having multiple inputs and multiple outputs that
21 correspond to the respective inputs and outputs of the second data structure; and

22 use the second data structure to program routing of the matrix switch's
23 inputs to the matrix switch's outputs for the given time line.

1 50. (Original) The computer-readable media of claim 49, wherein the
2 matrix switch has a single output that provides a data stream that represents the
3 editing project.
4

5 51. (Original) The computer-readable media of claim 49, wherein the
6 matrix switch has at least one feedback loop coupled between an output and an
7 input.
8

9 52. (Original) The computer-readable media of claim 51, wherein the
10 feedback loop contains a transition element having two or more inputs and a single
11 output, the transition element being configured to transition between multiple data
12 streams.
13

14 53. (Original) The computer-readable media of claim 51, wherein the
15 feedback loop contains an effect element having an input and an output, the effect
16 element being configured to operate on a first data stream to provide a second data
17 stream that is different from the first data stream.
18

19 54. (Original) The computer-readable media of claim 49, wherein the
20 first data structure comprises a tree structure.
21

22 55. (Original) The computer-readable media of claim 49, wherein the
23 second data structure comprises a grid structure.
24
25

1 56. (Original) The computer-readable media of claim 55, wherein the
2 instructions cause the computer to change one or more data values within the grid
3 structure to ensure that no two switch inputs are routed to a primary switch output
4 at any one time.

5
6 57. (Original) The computer-readable media of claim 55, wherein the
7 instructions that cause the computer to process the first data structure to provide
8 the second data structure cause the computer to:

9 define a grid row for each of a number of data stream sources;
10 enter data values in each grid row, the data values being associated with a
11 time period for which the data stream source desires to be routed to a primary
12 output of the matrix switch; and

13 change at least one data value in at least a portion of a grid row if a
14 determination is made that another grid row has an entry that indicates that its
15 associated data stream source desires to be routed to the primary output of the
16 matrix switch at the same time.

17
18 58. (Original) The computer-readable media of claim 57, wherein the
19 instructions cause the computer to change said at least one data value responsive
20 to a transition that is defined to occur between two data stream sources.

21
22 59. (Original) The computer-readable media of claim 57, wherein the
23 instructions cause the computer to change said at least one data value responsive
24 to an effect that is applied on a data stream source.
25

1 60.-78. (Canceled).

2
3 79. (Original) A multimedia system comprising:

4 an application program configured to enable a user to define a multi-media
5 project in which multiple digital source streams can be combined;

6 a software-implemented matrix switch having multiple input pins and
7 multiple output pins, the input pins being individually associated with inputs that
8 can compete, during a common time period, for a particular output pin that is
9 associated with the matrix switch, the switch being configured to receive, at its
10 input pins, digital source streams;

11 a first data structure associated with the matrix switch and configured for
12 use in programming the matrix switch to provide a routing scheme for routing
13 input pins to output pins such that at any given time, only one input pin is routed
14 to the particular output pin; and

15 a second data structure associated with and different from the first data
16 structure, the second data structure representing a user-defined multi-media project
17 and being configured so that the first data structure can be derived therefrom.

18
19 80. (Presently Amended) The multi-media system of claim ~~80~~ 79,
20 wherein the first data structure comprises a grid structure.

21
22 81. (Original) The multi-media system of claim 80, wherein the second
23 data structure comprises a tree structure.